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The Changing Face of Youth Employment in Europe

Paul Lewis and Jason Heyes

Forthcoming in *Economic & Industrial Democracy*

Abstract

This article examines trends in youth employment across the EU-15 countries during 2002-6 and 2007-11. Drawing upon microdata from the EU-Labour Force Survey it examines changes in contract-type, hours worked and occupation by level of education. Although the financial crisis creates a discontinuity in numbers employed, and despite certain country specificities, we observe common structural changes across the two periods. We find an increasing shift from permanent full-time to temporary part-time contracts, the ‘hollowing out’ of traditional mid-skill level occupations and evidence of ‘occupational filtering down’ whereby the higher-educated are substituted for the lower-educated in low-skilled occupations. We observe some growth in ‘professionals’ following the crisis, but little evidence of the rise of a new knowledge economy. This raises questions concerning the most appropriate policy approaches to education and training and labour market regulation if European nations are to provide high-quality employment opportunities for their young people.

1. Introduction

The economic crisis that began in 2007 has had substantial consequences for European labour markets. Few EU member states avoided increased unemployment and some, such as Spain, Lithuania and Latvia, witnessed substantial increases in joblessness. Young people were particularly badly affected by the crisis. The average EU28 unemployment rate for people aged 15-24 years, which had stood at 15.3 percent in 2007, reached 23.5 percent by 2013 (European Commission, 2015a: 156). The percentage of young people who were NEET (not in education, employment or training) increased from 10.9 to a peak of 13.2 percent in 2012, before falling slightly. The deterioration in the labour market prospects of young people have led to the fear of a ‘lost generation’ being expressed. Policy makers at European and national levels have responded by developing new labour market measures, such as the Youth Guarantee introduced by the European Parliament in 2010, intended to provide unemployed young people with additional training opportunities and encourage employers to hire them¹.

A focus on the needs of unemployed young workers is understandable given the substantial increase in the extent to which young workers have become excluded from work. Less attention has been paid, however, to developments in the *employment* of young people in the years prior to and following the Financial Crisis. It is this issue that provides the focus for this article. Drawing on the construction and analysis of microdata from the EU Labour Force Survey for the EU-15 countries, we examine changes in the distribution of young workers by contract type (fixed-term v. permanent and part-time v. full-time) across occupations over time, comparing young people with different levels of education. The article demonstrates how occupational restructuring which began prior to the Great Recession has affected the employment of young people. The article takes issue with accounts of labour market transformation and European and national policy responses that emphasise the importance of skill-biased technological change and the growth in knowledge work. We show that, as far as young workers are concerned, employers may be demanding a higher level of qualification, but this involves a substitution of well-qualified young workers for relatively low-qualified workers in occupations that are in many cases stable in terms of their intrinsic skill and knowledge requirements. Although this phenomenon has previously been recognized (e.g. Batenburg and de Witte, 2001), studies have typically been nationally specific (Keep, 2012) and pre-date the start of the economic crisis. This article, by contrast, provides a nuanced analysis of developments affecting young people in different EU member countries, comparing pre- and post-crisis periods and using fine-grained data. The article proceeds as follows. Section 2 unpacks the theoretical and empirical literature on the changing nature of work and skills, focusing in particular on the situation of young workers. Section 3 outlines the analysis for this study and systematically presents our findings. Section 4 sets out our conclusion and discusses their implications.

2. Skills, occupations and young workers

A central theme in debates relating to contemporary developments in work and employment has been the claim that the structure of employment in European economies is being transformed as a consequence of a decisive shift in employers' skill demands in favour of highly-educated and highly-skilled 'knowledge' workers, with a corresponding decline in demand for low-skilled workers. Technological changes, particularly the diffusion of ICT-based technologies, are said to have a 'skill-bias' that has favoured highly-skilled workers, resulting in their wages and job prospects increasing relative to those of unskilled workers (Autor et al., 2003; Machin, 2001; Nickell and Bell, 1995). Some have also emphasised globalisation and associated increased competition from relatively low-wage economies as a driver of change, creating new challenges for developed economies that might be met by building societal capacity for high skills (Brown, 2001; Brown and Lauder, 1996). The twin forces of globalisation and technological change have also been invoked by policy makers in

industrialised economies (Lloyd and Payne, 2003) and by the European Commission, which has claimed that EU member states have been ‘confronted with a quantum shift resulting from globalisation and the knowledge-driven economy’ (European Commission, 2002: 3). The Commission’s flexicurity agenda, which aims to promote labour market flexibility while maintaining employment security for workers, is premised on the assumption that in addition to demanding higher skills, globalisation and technological change require firms and workers to be more adaptable and have caused jobs to become less secure (European Commission, 2007). As a consequence, workers will be required to change jobs more frequently and should therefore enhance their ‘employment security’ by regularly participating in ‘lifelong’ education and training. Furthermore, the Commission has argued that greater labour market flexibility alongside improvements in education and training are necessary in order to improve the prospects of labour market ‘outsiders’, such as young workers and people in temporary jobs (op cit.). While exhorting EU member countries to pursue flexicurity policies, the Commission has been a direct agent of labour market liberalisation, particularly in countries (such as Portugal and Greece) that experienced financial distress in the aftermath of the 2008 financial crisis (Heyes and Lewis 2015).

Within the umbrella of flexicurity various EU initiatives have sought to improve the quality and effectiveness of education and training and increase participation in ‘lifelong learning’ (see Heyes and Rainbird 2009). The Commission’s approach to education and skills has consistently demonstrated two over-riding concerns. The first has been to continuously enhance the skills of European workers, on the assumption that occupations are becoming more skill intensive. The second concern has been to reduce information asymmetries in more rapidly changing and liberalised labour markets, so as to reduce the extent of horizontal skills mismatches, ensure that the skills supplied are in line with the present and future predicted demands of employers and thereby improve the allocative efficiency of the labour market. EU activities are currently organised within the Education and Training 2020 (ET 2020) framework, which is intended to provide orientation and guidance to member states. A Joint Report published in 2015, which drew on inputs from individual EU member states, set out the Commission’s priorities for education and training, including the development of ‘relevant and high-quality knowledge, skills and competences developed throughout lifelong learning’, ‘open and innovative education and training’, greater transparency in qualifications and more inclusive education opportunities (European Commission, 2015b). This was followed in 2016 by the New Skills Agenda, which brings together existing and new initiatives designed to improve the quality and relevance of skill formation, make skills and qualifications more visible and comparable and improve skills intelligence (European Commission, 2016).

Of particular salience to the employability of young people, the 2015 Joint Report emphasised the need to increase the supply of graduates and ‘ensure that all forms of higher education provide students with relevant high-level knowledge, skills and competences that prepare them for their future careers’ while recognising that ‘graduate employability remains stagnant across the EU’ (European Commission, 2015b: C417/26-27). Vocational education and training are recognised to be important, but given their diversity across member states, ‘all forms of work-based learning’ engaging with ‘all stakeholders’ is encouraged (Ibid.:28). Yet missing from the Commission’s assessment here and elsewhere is a clear acknowledgement of the extent of vertical mismatch between skills and occupations, as more highly educated and skilled young workers have increasingly come to be employed in jobs for which they are over-qualified. The analysis also fails to recognise that increasing labour market liberalisation renders employment in lower skilled jobs more insecure and can inhibit employer investment in skills which would facilitate pathways into higher skilled employment for young people.

Although there is a consensus that demand for highly-skilled workers has increased, not everyone agrees that demand for low-skilled workers is disappearing. Nolan and Slater (2010) have shown that growth in employment in higher level professional and technical occupations in the UK has coincided with an expansion of manual service occupations requiring low or intermediate skills, resulting in an ‘hour-glass’ economy. Similarly, analyses of the UK, US, West Germany and other OECD countries (see Autor et al., 2006; Goos and Manning, 2007; Goos et al., 2009, 2014; Spitz-Oener, 2006) have found that a ‘polarisation’ of work has occurred. Goos and Manning (*pace* Autor et al., 2003) note that the scope for capital substitution that is key to the ‘skill-biased technological change’ thesis is limited in respect of low-paid non-routine manual work (such as cleaning) and more likely to affect routine administrative work in the middle of the earnings distribution (e.g. clerical and craft work), suggesting that it might be more accurately referred to as Routine-Biased Technical Change (RBTC). Their analysis suggests a stripping out of ‘middling’ jobs and a growth in ‘high’ and ‘low’ skill jobs. Looking further afield, Glyn’s (2001) comparison of OECD economies has shown that although employment rates for the least qualified men fell in the 1980s and ‘90s, employment rates for low-qualified women increased substantially in proportional terms in several countries. The combined effect was that the employment rate of the lowest quarter of the least educated of the workforce increased in Australia, the USA, Ireland and the Netherlands and did not change at all in Canada. Glyn found that employment of those in the middle of the educational distribution increased at a faster rate than for those in the top quartile in 7 out of 15 OECD countries, the position of the least qualified tended to deteriorate more in the 1980s than the 1990s and that overall the deterioration in their employment had been relatively modest. Forecasts provided by CEDEFOP, however, suggest that the EU will experience a substantial decline in the proportion of jobs requiring low qualifications (from 20 percent in 2010 to 15 percent by 2020). (CEDEFOP, 2010a). CEDEFOP predicts that 8.5 million

new jobs will be created in knowledge and skill intensive occupations, including high-level managerial and technical jobs, while demand for intermediary level jobs, such as skilled manual workers and office clerks, is expected to decline. However, demand for elementary jobs, such as security staff, domestic helpers, cashiers and cleaning workers, is also expected to increase by approximately two million by 2020. According to CEDEFOP, demand for high and medium qualified workers will increase even in relation to jobs previously held by low-qualified workers and it is implied that many of these jobs will therefore be upskilled.

In exploring changes in the demand for labour, however, it is essential not to confuse changes in employers' qualification requirements with changes in the skill content of jobs. As Heylen *et al* (1995) and Lewis (2011) note, an increase in the proportion of highly-educated workers in an industry (or occupation) does not necessarily imply that technology has altered the structure of labour demand. At times of high unemployment, displacement (or 'ladder') effects may occur as employers hire relatively well-qualified workers for jobs that could have been performed by less educated workers at the same wage. A CIPD commissioned report (2015) found that the growth in graduates has increased (unevenly) across the EU but that the growth in jobs which require graduate skills² has not kept pace, resulting in 'occupational filtering down' (Ibid.:28) or 'credentialism' (Goos and Manning, 2007). This was found to be a particular issue for the UK with its high proportion of graduates, exacerbated by the economic crisis (ONS, 2013). The ONS found that the proportion of recent graduates³ working in non-graduate jobs increased from 37 per cent in April to June 2001 to 47 per cent in April to June 2013 and that an upward trend has been particularly pronounced since 2008. The proportion of recent graduates in employment and working in jobs that could be defined as 'low/lower middle skill' increased from 26 per cent in 2001 to 38 per cent in 2013.

This evidence suggests that the crisis has increased the extent of vertical skills mismatch in several European countries (i.e. workers possessing a level of education that is greater than that required in order to undertake a job - see CEDEFOP, 2010b; Clogg and Shockey, 1984; Tomlinson et al., 2013). While some employers may realise a one-off benefit from this, to the extent that more highly educated workers may have the potential to be more productive than the lower educated workers whom they are replacing in a given role, any productivity improvements are likely to be marginal. The economist William Baumol influentially argued that the potential for productivity increases in services, particularly personal services, is limited because, unlike manufacturing, technologies of mass production cannot be employed (Baumol 1967; Baumol et. al. 1985). In services 'it is essentially the labour effort itself we wish to consume' (Pierson, 2001:84) and quality is likely to be degraded by increasing labour productivity beyond a certain point. There are limits to how many haircuts a hairdresser can perform or patients a nurse can care for, for example. Such limits, particularly associated with lower skilled service roles, create a number of problems associated with the phenomenon of 'occupational filtering down'.

Workers with lower educational attainments will be less likely to be able to obtain a job; those relatively well educated workers who are employed in jobs for which they are ‘overqualified’ will secure a lower-than-anticipated return on their investment in education; and, to the extent that their skills and knowledge are under-utilised, they will effectively be under-employed with potential negative consequences for individual wellbeing and society through lower than potential productivity growth and a poor return on societal investment in education and skills. It might be argued that a sub-optimal job is preferable to being unemployed and that by retaining a connection to the labour market relatively well-educated workers will maximise their chances of being able to secure a better job as economic circumstances improve. However, there is mixed evidence concerning the extent to which ‘under-qualified’ and temporary jobs serve as stepping stones to more secure, better-paid employment or, alternatively, serve as career traps (de Vries and Wolbers, 2005; Forrier and Sels, 2003; Korpi and Levin, 2001; Scherer, 2004). Career mobility theory would predict that vertical mismatch will be temporary and that workers will move to higher-level jobs. Scherer (2004), however, found that in the UK, Germany and Italy, workers who entered the labour market via job positions for which they were over-qualified experienced ongoing negative consequences for their chances of securing a better job. Workers in low-paid jobs and with non-standard employment contracts receive less employer-funded training than permanent employees and those in higher paid jobs and thus have fewer opportunities to enhance their ‘employability’ (Forrier and Sels, 2003). It is therefore uncertain that well-educated workers will be able to escape low-skilled employment in the longer term. Furthermore, young workers in general face longer and more complex education-to-work transitions, involving increasingly differentiated trajectories (Keep, 2012; Green, 2013). Occupations with highly regulated entry points, typically involving apprenticeships, have become less common in the UK and elsewhere (Marsden, 2010), although apprenticeship training remains highly institutionalised and widespread in countries such as Germany, Austria and Denmark.

The proportion of young workers in part-time and temporary employment has also increased in many EU economies over time (Thompson, 2013). While a certain amount of the increase in part-time work can be attributed to students combining their studies with paid work (as is common in the UK), our analysis highlights the gap between those looking for work and the opportunities available. Eurostat data further indicate that substantial proportions of young workers in most EU countries are involuntarily employed in part-time jobs and the proportion has increased over time in most cases. The proportion has tended to be lowest in Denmark, the Netherlands and Slovenia and highest in southern European economies, as well as Sweden⁴. Under-employment in terms of vertical skills mismatches has therefore increased alongside under-employment in the sense of constrained and uncertain hours of work. Similarly, the proportion of young people who take a temporary contract job only because they cannot find a permanent job is substantial, particularly in the southern European economies⁵.

European education and labour market policy has been strongly influenced by the assumptions of skill-biased technological change (SBTC) and globalisation mentioned earlier, in particular the belief that these developments necessarily increase demand for higher cognitively-skilled workers and speed up the disruption of industries and activities that workers are required to perform. In response countries have been encouraged to increase the proportion of young people undertaking tertiary education. The analysis that follows, however, suggests the need for a more nuanced account of occupational change and employers' skill requirements. We examine shifts by occupation and highest level of education in the proportion of young workers in full-time and part-time jobs, as well as permanent and fixed-term jobs, before and after the start of the crisis and show that for many highly-qualified young people, work is becoming less secure while those with lower qualifications have a higher risk of being excluded from the labour market altogether. While this might suggest that the Commission's insistence on skill upgrading is fully justified, we also draw attention to a developing tendency for employers to upgrade their qualification requirements, without upgrading the skill content or quality of jobs. Indeed, for younger people, irrespective of their educational background, employment growth has overwhelmingly occurred in lower-skilled occupations with part-time and temporary contracts.

3. Analysis and Findings

We examined the changes in employment of young workers, aged 15-24, across the EU-15 countries in two periods, 2002-6 and 2007-11, to assess trends in employment pre and post the financial crisis. The analysis was limited to the EU-15 countries as data for the remaining members of the EU 28 are less comprehensive and not always available for all years. Our data source was the anonymised micro data of the EU-Labour Force Survey, EU-LFS, which uses large quarterly⁶ surveys (non-panel) undertaken by the national statistical offices of each country, multiplied to give representative data for the respective populations. As the publicly accessible Eurostat tables do not simultaneously combine the occupation, education, working-time and contract-type variables in which we are interested, we reconstructed country and EU-15 level data from the underlying EU-LFS microdata for young people (see Appendix 1 for details of the variables used).

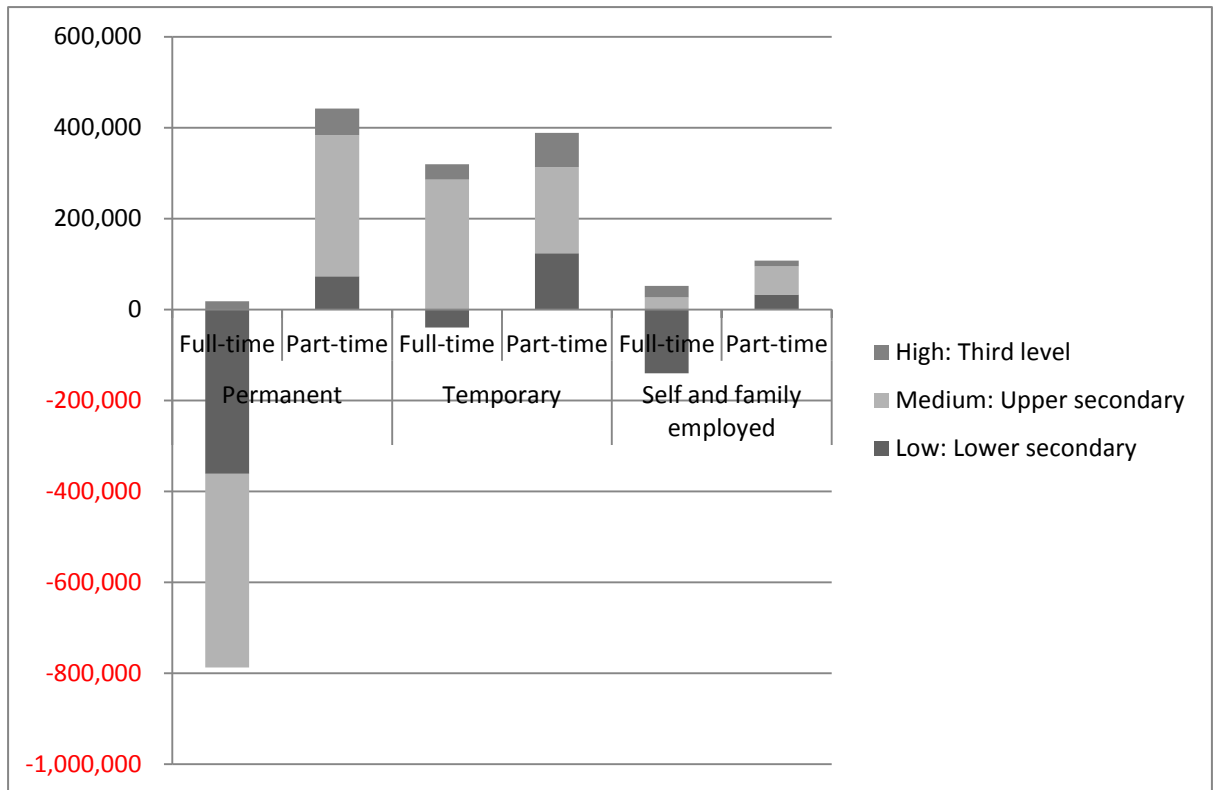
Section 3.1 examines the trends for the EU-15 in type of youth employment -contract type and time worked- by level of education, in each of the two periods. It also examines whether changes in the supply of young workers might account for our findings. Section 3.2 examines the trends in youth employment by occupation and level of education for the EU-15, relating this to the analysis of contract type and time worked in section 3.1. More detailed analysis is undertaken for the only two one digit occupations, 'Professionals' and 'Service and Sales workers', which grew between 2007 and 2011.⁷

3.1 Changes to type of employment -contract type and time worked- by level of education

In the EU-15 as a whole, relatively modest job growth for 15-24 year olds in the period immediately preceding the crisis turned to widespread job destruction after the crisis commenced: a 0.39 million increase in 2002-6 was followed by a fall of 2.31 million in 2007-11. Already in the earlier period the greatest contractions were being experienced in the Southern European countries of Italy (25.7%), Portugal (26.4%) and Greece (19%), with perhaps surprisingly, Sweden (15.7%) the next largest. Net expansion was concentrated in the UK, Germany and Spain in terms of numbers, but each from large bases of youth employment, which means they were single digit in percentage terms.⁸

Despite the shift from job creation to job losses, a number of pre-crisis trends continued, and in some cases accelerated, after the start of the financial crisis. Between 2002 and 2006, the most conspicuous trends were a reduction in young people employed in permanent and full-time jobs (a decline of 0.77 million) and a growth in part-time and temporary employment (see Figure 1). The lowest educated workers bore the heaviest losses: the number of low-educated workers employed in full-time jobs fell by 0.51 million and their employment overall declined by 0.28 million (4.1%). Employment of medium-educated young people grew by 4.8%, despite a 0.14 million reduction in the number with full-time jobs, while employment of highly-educated young workers increased in every category of employment, growing by 0.22 million (11.9%) overall, although approximately two-thirds of this was in part-time employment.

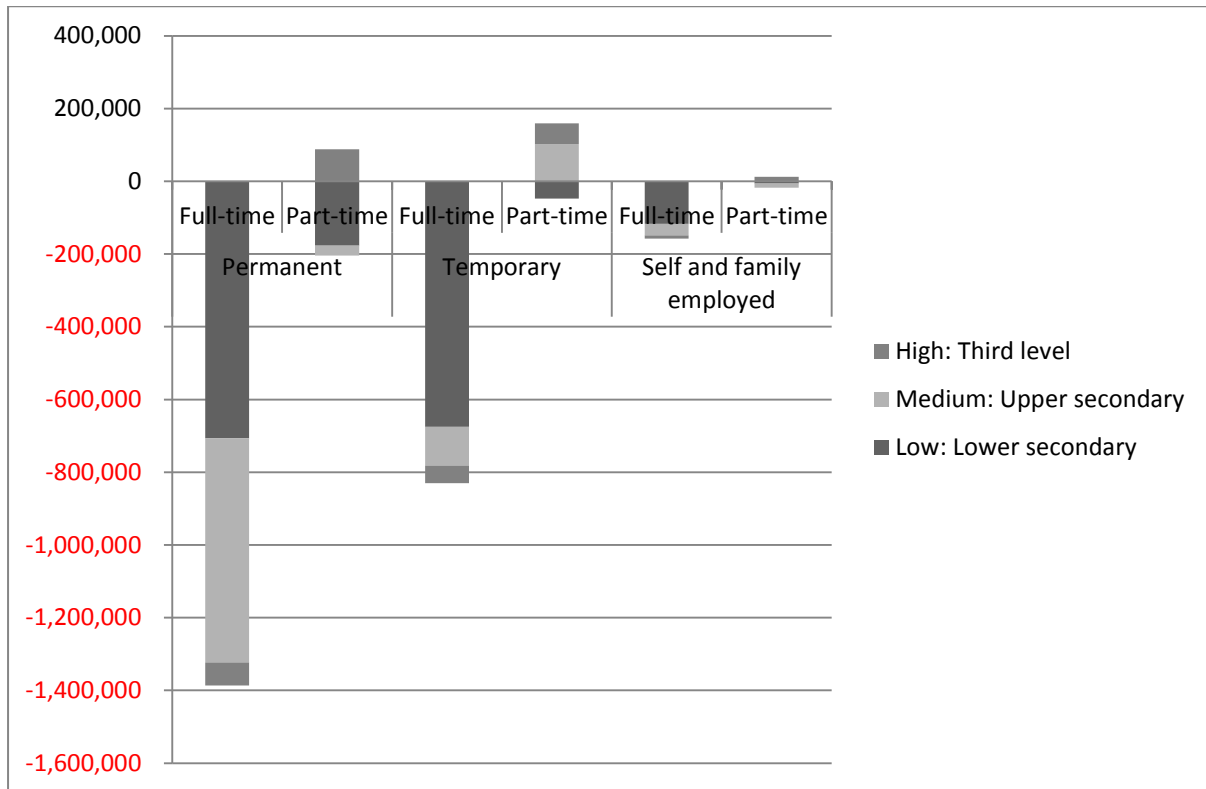
Figure 1 – Change in youth employment by educational level and type of employment, 2002-6



During 2007-11 full-time job losses spread from permanent jobs to each of the other types of contract. While the brunt of losses in full-time jobs continued to be borne by the low-educated, after the start of the crisis losses spread to more educated young workers. The only expansions were in part-time work for the highly-educated and part-time temporary contracts for the medium-educated (see Figure 2). All of the EU-15 countries reduced youth employment during this period, with the exception of Sweden which grew by 21%, reversing its contraction from the earlier period. The countries effectively divide into two groups, with one group experiencing large contractions and the other very small contractions (with the UK somewhere between the two). The largest contractions by proportion were in Ireland and Spain (around 50%), followed by Greece (37%), Portugal (28%) and Italy (21%). The size of these falls is consistent with the timing of the fiscal distress which these countries suffered and the austerity measures implemented in response. Overall employment began to fall in Ireland and Spain in quarter three 2008 and in Greece and Portugal a year later. Italy did not suffer significant employment falls during this period, which suggests that youth employment suffered disproportionately from the economic downturn (Heyes and Lewis 2015: 593,597). The reductions in youth employment were much smaller in Austria, Belgium, Germany, Denmark, France, Luxembourg and the Netherlands (1-3% in each case), with the UK falling between the two groups at 12%. Most of those countries that experienced relatively low falls in youth employment have well-established dual apprenticeship training systems which act to coordinate the flow of trained young people into labour markets. The governments of EU member states that experienced substantial increases in youth

unemployment have recently sought to develop dual training systems of their own. An initial group composed of Italy, Spain, Portugal, Greece, Latvia and Slovakia embarked on a reform path in 2012 and other countries such as Hungary are now setting out to reform their VET systems along dual lines (Hastings and Heyes 2016).

Figure 2 – Change in youth employment by educational level and type of employment, 2007-11



It is possible that some of the changes towards part-time and temporary employment occurred due to the shifting preferences of young workers, particularly if lower-educated workers were choosing to remain in education and training for longer and therefore removing themselves from the labour market for full-time employment. If work for this age group is increasingly a secondary activity to fit around the primary activity of education or training, then we might expect such workers to be ambivalent about temporary contracts and to prefer part-time over full-time employment.⁹

It is very difficult to isolate a pure supply shift resulting from the changing preferences of workers, not least because education decisions will likely be influenced by available employment alternatives. However, there is a variable in the EU-LFS microdata which asks respondents their ‘main status’. This can be used to distinguish young people who categorise themselves as primarily in employment, a proxy for full-time employment, which includes unpaid work for a family business and full-time apprenticeships and traineeships, and those who consider themselves primarily in education, further training or unpaid work experience, which we reasonably expect allows for part-time employment around it. Examining changes in responses to this variable across time periods enables us to assess whether there has been a balancing shift of young people from being primarily employed to being primarily in education and training (see Table 1). Unfortunately, this variable was not recorded for every country and year (the UK and Germany do not record it at all and we excluded Spain and Luxembourg due to missing years). We also excluded France due to unexplained large step changes in

the data in 2003, 2006 and 2008. The remaining ten countries are not representative of the whole EU-15, but the findings are indicative of the shifting main activity of young people.

Between 2002 and 2006 there were reductions in the number of lower secondary-educated and medium-educated young people who were primarily working (0.47 million and 0.17 million respectively). The fall was partly offset by increases of 0.18 million low-educated and 0.03 million medium-educated young people in full-time education and training. The residual differences (0.47 minus 0.18 and 0.17 minus 0.03) cannot be explained by increases in reported unemployment, which were very modest (0.03 million and 0.02 million respectively). This implies an increase of 0.28 million low-educated and 0.12 million medium-educated young workers who were not in education, employment or training (NEETs) and who would have been available for full-time work (Table 1). It suggests that the scale of substitution of part-time, temporary employment for full-time permanent employment during this period cannot be explained by an equivalent shift of young people into full-time education and training. Rather, it indicates an insufficient quantity of full-time, permanent employment opportunities to meet the available supply of low and medium-educated young workers.¹⁰

Table 1 – Change in main status of young people, available EU-15 countries, 2002-6 and 2007-11

Main status	Employed		Unemployed		Education and training	
	2002-6	2007-11	2002-6	2007-11	2002-6	2007-11
Low educated	-0.47	-0.47	0.03	0.10	0.17	0.30
Medium educated	-0.17	-0.26	0.02	0.27	0.03	0.13
High educated	0.04	-0.03	0.03	0.03	0.17	0.08

(Data reported in millions, 2dp)

Between 2007 and 2011 there were comparable reductions in the number of low and medium-educated young workers who were primarily working, large increases in the number responding as unemployed, particularly the medium-educated, and large increases in those in further education and training. The highly-educated experienced a reduction in those primarily in employment, a smaller increase in the number in education and training, and a stable increase in unemployment (see Table 1). The unaccounted for difference between reductions in main-status as employment and increases in unemployment and education and training fell to 0.07 million for the low-educated while for the medium- and highly-educated the increase in those unemployed and primarily in education and training outstripped the reduction in those who were primarily working (0.14 million and 0.08 million

respectively). This suggests that ‘missing’ young people or ‘NEETS’ from the previous period either re-entered education and training or registered as unemployed in response to the worsening labour market conditions. Continuing the trend from the earlier period, it is not possible to explain the scale of increase in part-time temporary work and loss of full-time permanent work, as being due to young people increasingly choosing to remain in education and training for longer.

Table 2 – Change in reported involuntary temporary and part-time employment, 16-24 year olds, EU-15 countries, 2002-6 and 2007-11

Period		Reason for temporary employment: could not find permanent employment		Reason for part-time employment: could not find full-time employment	
		2002-6	2007-11	2002-6	2007-11
Low educated	Male	61.32* (2.44%)**	-170.60 (-3.20%)	54.33 (4.40%)	16.95 (5.30%)
	Female	60.32 (3.98%)	-46.06 (2.30%)	91.97 (7.80%)	0.49 (2.75%)
Medium educated	Male	233.99 (11.43%)	8.04 (1.38%)	66.95 (4.81%)	87.90 (5.81%)
	Female	204.28 (10.09%)	14.50 (1.36%)	189.18 (7.89%)	69.90 (3.61%)
High educated	Male	14.37 (10.74%)	NA***	NA	NA
	Female	64.40 (10.13%)	-11.35 (1.16%)	29.01 (1.65%)	41.42 (5.85%)

*Indicates change in number of workers reporting this reason during the period, (thousands).

**Numbers in brackets indicate the change in the proportion of this category of worker reporting their reason for temporary employment as being unable to find permanent/full-time employment, (2dp). For some small labour market segments, particularly the highly educated, there was no reliable data reported for certain answer categories and hence these cannot be included in the proportional calculation.

***Where cells indicate NA it is because reliable data for this answer category has not been reported for one of the years. This occurs in the smaller labour segments for the highly educated males.

Source: Bespoke data request from Eurostat, author calculations.

In order to more directly examine the employment preferences of young workers we analysed responses to questions asking their reason for being in temporary and part-time employment. Table 2 shows the change in the number and proportion of temporary and part-time young workers reporting that they could not find alternative permanent or full-time employment respectively. We take these responses to indicate involuntary part-time/temporary employment. As seen in table 2, between 2002-6 there were increases in the proportion of involuntary temporarily employed young workers, with the largest increases being for medium and high educated. There were no significant differences by gender. There were also increases in the proportion of young workers involuntarily part-time employed. These increases affected young women more than young men and were greatest and of similar scale for the low and medium educated. Between 2007 and 2011, the proportional increases in involuntary temporary employment reduced, while the proportion of low-educated men in this type of employment actually fell. However, this is within the context of a large reduction in temporary

employment for all low-educated workers, with 479,000 fewer low-educated male workers and 335,000 fewer females (see Figure 2). Young workers with temporary contracts were treated by employers in some countries, particularly Spain and the UK, as the first buffer against weakening demand. Hence, some of those reporting involuntary temporary employment in the earlier period had subsequently left employment altogether during this one. Proportional increases in part-time work continued during this period but these became greater for men than women, indicating the extent to which falling demand pushed more young men into involuntary short-hours working. We conclude from this section that the changes toward part-time, temporary employment, which began well before the financial crisis, did not represent a response to the changing education and training of young people and had significant negative consequences, including an increase in NEETs and subsequent unemployment for low and medium educated workers, and increases in involuntary part-time and temporary employment for those workers of all educational levels who remained employed.

3.2 Changes by occupation and level of education

Between 2002 and 2006, the occupations which exhibited the largest job losses were those associated with traditional low-skilled administrative and manual employment - ‘crafts and related trades’ (concentrated in Italy and Portugal), ‘plant and machine operators and assemblers’ and ‘clerks’ (fairly evenly spread). Consistent with the changes reported in Section 3.1, the lost jobs were largely full-time and held by low-educated young people, with the medium-educated bearing the brunt of the losses among ‘clerks’.¹¹

The growth occupations also tended to be low-skilled (‘services and sales’ and ‘elementary occupations’), with more limited growth in the higher-skilled ‘technicians and associate professionals’ category. While most countries created new ‘service and sales’ employment, the UK and Spain were the largest early movers, both absolutely and proportionally. This likely reflects the suitability of these countries’ labour markets to the newly emerging service sector business models, with the UK having the lowest employment protection legislation in Europe and Spain creating a large proportion of temporary contracts during this period. New employment was predominantly part-time and where full-time jobs were created there was evidence of credential inflation, with the low-educated experiencing job-losses across the growth industries (see Figures 3 and 4). Hence medium-educated workers replaced low-educated workers in ‘elementary occupations’, medium and highly-educated workers replaced the low-educated in ‘services and sales’ and highly-educated workers replaced the medium and low-educated in ‘technicians and associate professional’ occupations. Exceptions were Denmark, which expanded roles for the low-educated across every occupation except ‘professionals’, and Germany, which continued to create jobs for the low-educated in traditional occupations and for the mid-educated across occupations except ‘crafts and related trades’. Germany and Austria

demonstrated less credential inflation in ‘technicians and associate professionals’ than in other countries, creating the majority of new roles for the mid-educated. This is likely indicative of the strength of export oriented manufacturing in these countries during this period and the well-established vocational training and industrial relations systems providing pathways for young people into these industries. There was some evidence that temporary contracts were replacing permanent contracts, particularly for the new full-time positions taken by the medium and highly educated. The new part-time roles were fairly evenly split between permanent and temporary contracts.

Figure 3 – Change in full-time youth employment by occupational group and level of education, 2002-6

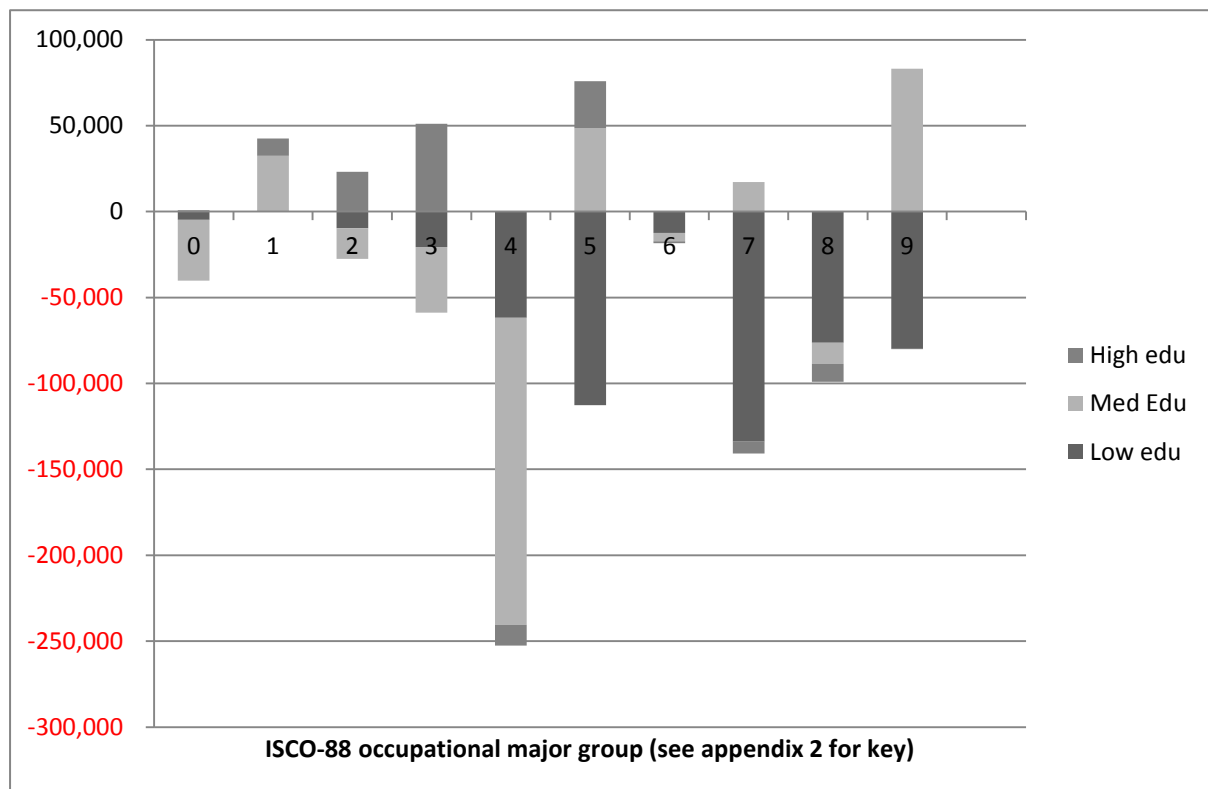
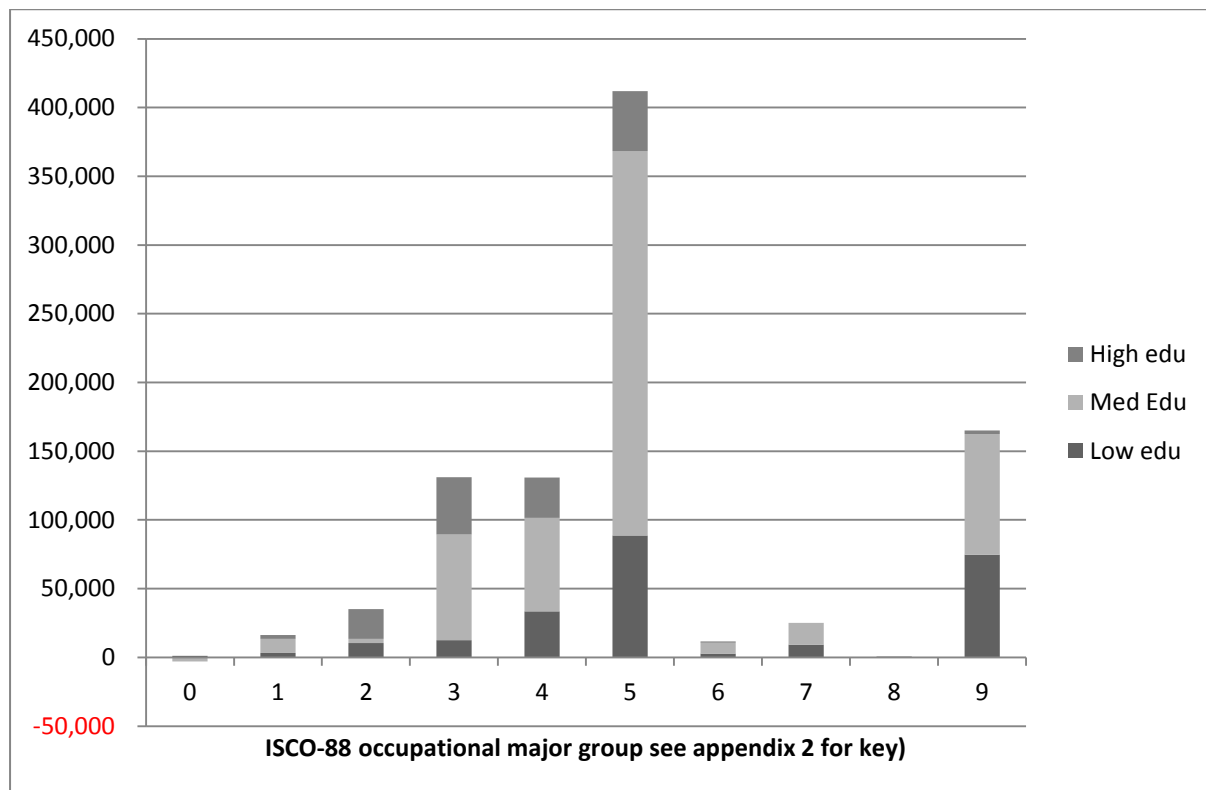


Figure 4 – Change in part-time youth employment by occupational group and level of education, 2002-6



Between 2007 and 2011, there was a very large acceleration in job losses for young people across all educational groups, types of contract and most occupations. However certain trends persisted from 2002-6. First, the largest losses continued to be felt by ‘clerks’, ‘crafts and related trades’ and ‘plant and machine operators and assemblers’, although on a much greater scale than in the earlier period. Second, the low-educated continued to bear the brunt of the losses, both in absolute number and proportionally. Third, full-time job-losses dwarfed part-time losses. Full-time losses were fairly evenly distributed between permanent and temporary contract employment, apart from those affecting medium-educated workers, where permanent jobs were more likely to be lost. Fourth, growth continued to be concentrated in ‘services and sales’ and ‘elementary occupations’, although growth in the latter was entirely in part-time employment and did not offset the losses of full-time jobs primarily held by low-educated workers. Fifth, credential inflation continued, with full-time highly- and medium-educated workers replacing low-educated workers in ‘services and sales’ jobs. A similar substitution took place in relation to part-time ‘elementary occupations’. The extent of credential inflation continued to differ between countries, for example Germany created the majority of its new ‘service and sales’ and ‘elementary occupations’ jobs for medium-educated workers while the UK only created new roles for the highly-educated. What is distinct during this period is, firstly, the perhaps surprising growth in ‘professional’ jobs, with increases in both full-time and part-time employment for all three educational levels (although dominated by medium and highly-educated

young people), and, secondly, the large-scale job losses among ‘technicians and associate professionals’, affecting both full-time and part-time jobs. In this occupation it is clear that credential inflation had reached Germany, with the only new roles being created for highly educated young people.

Figure 5 - Change in full-time youth employment by occupational group and level of education, 2007-11

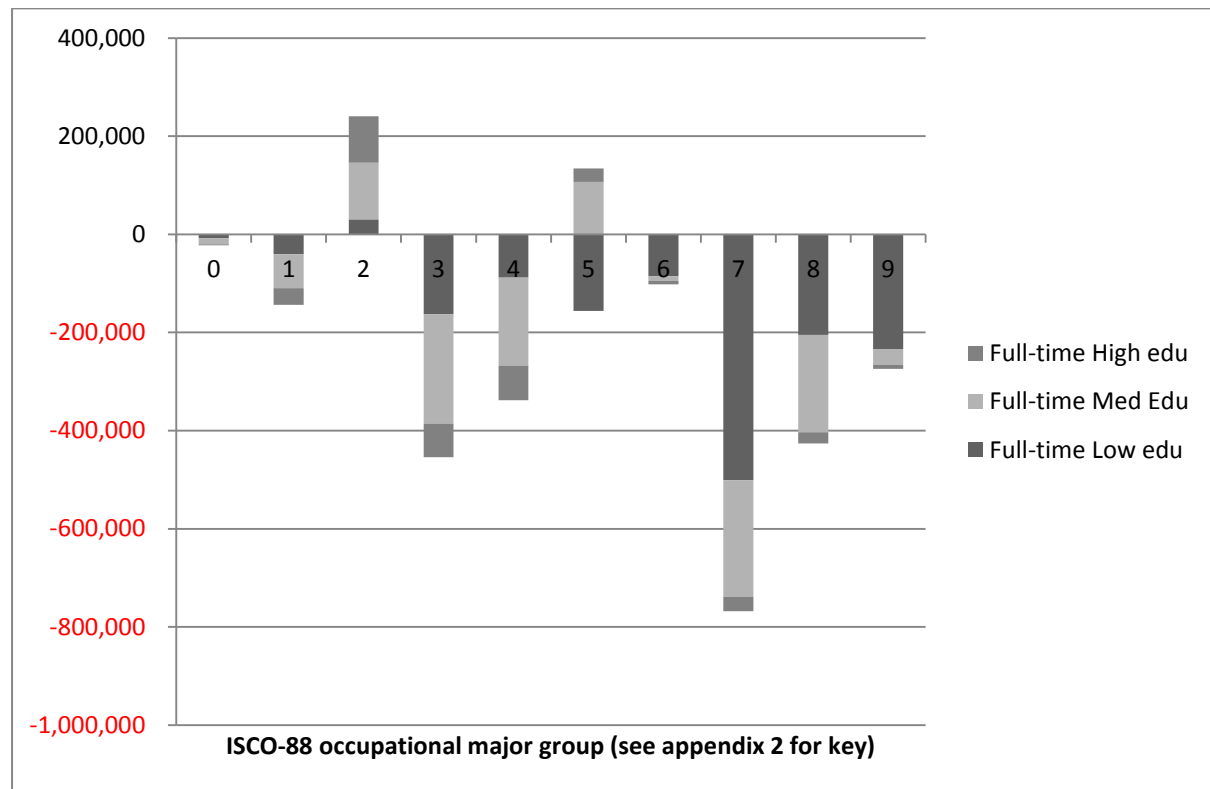
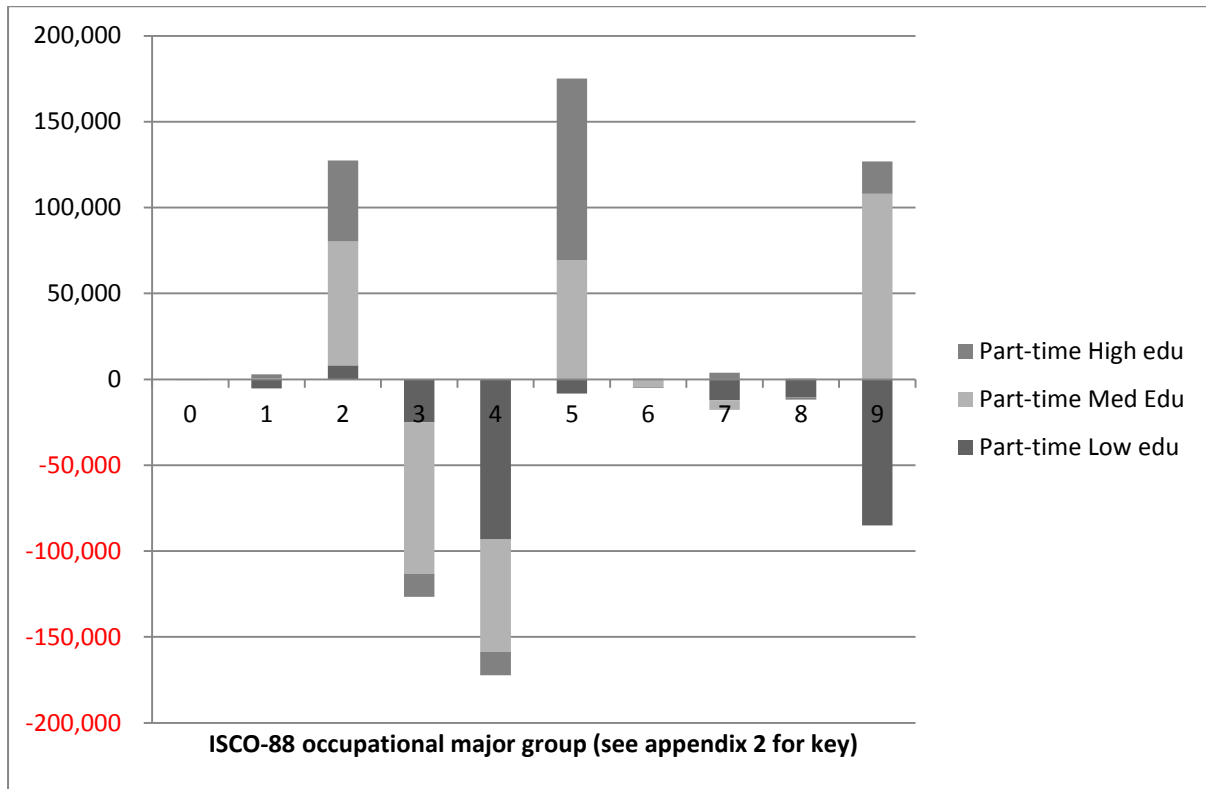


Figure 6 - Change in part-time youth employment by occupational group and level of education, 2007-11



Because net occupational growth only occurred in ‘professionals’ and ‘services and sales’ during this period we examined the more detailed occupations within these groups in order to pinpoint where the growth was occurring. From comparative country analysis it is clear that most of the growth in ‘professional’ jobs occurred in the UK and Germany. Therefore, we examined these countries at lower levels of occupational detail. We reconstructed the two digit ISCO groups within ‘professionals’ by looking at the three digit ISCO3D variable and mapping entries for 2007 (ISCO-88) and 2011 (ISCO-08) to the ISCO-08 two digit sub-groups (see Appendix 1 for more detail regarding the change in ISCO coding in 2011)

Table 3 – Growth in young people employed as ‘Professionals’ in Germany and the UK, 2007-11

ISCO-08 2 digit ‘Professional’ subgroups	ISCO-08 3 digit codes available in 2011	ISCO-88 3 digit codes available in 2007	DE	UK
21.Science and engineering professionals	211-6	211+214+221	42,753	30,724
22.Health professionals	221+222+226	222	43,313	40,284
23.Teaching professionals	231-5	231-5 but not matching ISCO-08	33,844	16,323
24.Business and administration professionals	241-243	241	18,721	87,244
25.ICT professionals	251-2	213	8,620	9,262
26.Legal, social and cultural professionals	261-5	242-246	-19,622	700
Total			127,629	184,537

Given the emphasis that is often placed on new, highly-skilled ‘knowledge economy’ jobs deriving from technological change, it is perhaps surprising that ICT jobs accounted for a relatively low proportion of total growth in both countries. The growth in Germany was primarily split between science and engineering professionals, health professionals and teaching professionals, with business and administration professionals a low fourth. Science and health were also areas of growth for the UK, but growth in business and administration professionals dominated.

Within these categories, we believe that the growth in health professionals is likely overstated¹², as is the reduction in jobs in ‘legal, social and cultural professionals’ in Germany¹³. The other two digit groups are largely comparable between 2007 and 2011, although the new coding system created a much greater number of detailed occupations, many of them new, which may affect survey respondents’ accuracy of recording of their occupations.

The largest area of growth for ‘professionals’ in the UK, ‘business and administration professionals’, did not divide further in 2007. This means that we could not make a one-to-one comparison of where the growth occurred in the UK within this broad occupational category. However, in 2011, we can see that the number of ‘sales, marketing and public relations professionals’ (70,124), far outstripped the number of administration (36,747) and finance professionals (23,372). The relatively low number in finance probably reflects the extent to which the financial crisis led to a reduction in the hiring of new graduates during this period.

Examining the only other one digit occupation to grow during this period, ‘services and sales’, most of the growth was confined to Germany, the Netherlands, France and Sweden, which contrasted with significant job-losses in Spain and the UK. Hence these were the countries that we examined in more detail. As with ‘professionals’ we reconstructed the two digit ISCO groups within ‘services and sales’ by looking at the ISCO3D variable and mapping entries for 2007 (ISCO-88) and 2011 (ISCO-08) to the ISCO-08 two digit sub-groups (see Table 3).

Table 4 – Growth in young people employed as ‘Service and Sales Workers’, 2007-11

ISCO-08 2 digit subgroups	DE	ES	FR	NL	SE	UK	EU-15
51. Personal Service Workers	1,760	-49,134	-29,974	15,499	9,291	-59,628	-191,004
52. Sales Workers	175,817	-38,038	84,399	76,465	33,928	-109,869	279,897
53. Personal Care Workers	-61,904	-24,613	17,328	20,082	18,571	40,297	21,339
54. Protective Services Workers	-581	-1,372	12,095	-1,583	2,157	27,181	37,073
Total	115,092	-113,157	83,848	110,463	63,947	-102,019	147,305

Notes: 51 maps to ISCO08 511-6, ISCO88(COM) 511-2,514; 52 maps to ISCO08 521-4, ISCO88(COM) 513; 53 maps to ISCO08 531-2, ISCO88(COM) 522; 54 maps to ISCO08 541, ISCO88(COM) 516

The most notable development is the large growth in ‘sales workers’ in many EU-15 countries, notably Germany, France and the Netherlands, and their large reduction in the UK.¹⁴ This likely reflects the substantial employment growth in this occupation experienced by the UK in the earlier period (see section 3.1) and, due to weak employment protection legislation, the ease with which UK employers could adjust their workforces to changing demand. While the UK showed evidence of credential inflation, with highly-skilled workers partially replacing low and medium-educated young workers, this trend was much less apparent in the other countries, potentially reflecting the greater supply of graduates into the labour market in the UK.

Personal services, which includes cooks, waiters, bartenders, travel attendants, hairdressers and beauticians and cleaning supervisors, also showed large losses across the EU-15, but is constituted by a smaller number of countries including the UK, France and Spain, while the other countries examined were fairly stable. Again, the UK experienced credential inflation in this occupational group.

There was little net change in young personal care workers or protective services workers across the EU-15. Germany stood out in having a significant net reduction in the former, which upon examining the three-digit data does not appear to be due to data anomalies.

4. Conclusions

While our analysis clearly shows the impact of the financial crisis of 2007-8 on the number of young people employed in the EU-15 countries, many of the structural changes in the type of work that young people were performing indicate long-term trends that were apparent before this time. These trends highlight the issues that developed European countries face in providing high-quality employment opportunities to young workers that can utilise their skills, provide stable and adequate levels of income and opportunities for progression. In many countries, there has been an increase in the precariousness of employment, reflected in a shift from full-time to often involuntary part-time employment and increasingly from permanent to temporary contracts. The growth in precarious jobs and underemployment has coincided with an increase in the extent of ‘credential inflation’ or ‘occupational filtering down’ whereby relatively highly-educated and trained workers are employed in lower-skilled occupations. Despite claims of a seismic shift towards a skill-intensive knowledge economy, we could not identify this in the limited post-crisis growth in ‘Professionals’ and our analysis indicates that the supply of highly-educated young people has been outstripping the growth in ‘good jobs’ requiring high skills for some time (see also Brynin, 2002; Keep, 2012). Consistent with the ‘hollowing out’ or ‘routine biased technical change’ theses, we identify a contraction in the traditional semi-skilled occupations of ‘clerks’, ‘crafts and related trades’ and ‘plant and machine operators and assemblers’ with growth concentrated in the lower-skilled, more transient ‘service and sales workers’ and ‘elementary occupations’. While the lowest-educated young workers were hardest hit by these changes, either losing employment altogether or finding themselves employed on more flexible terms in lower-skilled occupations, credential inflation was prominent in the UK and latterly even Germany, which sustained mid-skilled occupations for low and medium-educated young workers better than most countries prior to the crisis, but subsequently showed signs of occupational filtering down.

The one positive trend for young people following the crisis was the increase in employment of ‘professionals’, albeit dominated by the UK and Germany. However, the low level of growth in ICT professionals, Germany’s traditional strength in ‘science and engineering’ and the UK’s traditional strength in ‘business and administration’ raises questions of whether technological change and globalisation are (yet) radically altering employment opportunities for young people at the higher end of the labour market. The main effects observed in our data have been a reduction in the quality of employment opportunities at each educational level.

The findings have implications for the European Commission's objectives in the fields of education and training and labour market policy. The Commission has repeatedly emphasised the need to increase the supply of graduates and workers with higher-level vocation skills and enhance the transparency of qualifications, implying that employers' demand for workers with higher-level skills and qualifications is at risk of outstripping supply. However, the evidence presented in this paper suggests that the supply of educated workers is expanding faster than the number of jobs which are utilising them. Our findings raise important and interconnected issues. One is the speed and ways in which the nature of work is changing. While it is clear that a degree of 'hollowing out' of semi-skilled occupations has occurred, European policymakers appear to be convinced that skill-biased technological change will 'upgrade' these roles. This is at odds with the findings of this and other studies discussed in section two. Despite much media interest in a technological revolution occurring in work, the extent to which low-skilled manual activities can, or will, be automated out of existence in the near future is uncertain. What is clear, however, is that the presence of young workers in low-skilled manual jobs has increased. A related question is the appropriate approach to regulating labour markets given the structure of employment. Labour market liberalisation has exacerbated the precariousness of work and income for the large number of young people performing low-skilled roles, serving to reduce opportunities for career progression and participation in lifelong learning (the latter being an essential pillar of flexicurity). Labour market regulation and education and training represent national institutions which, along with other forces such as technological change, establish incentives for different kinds of business models and types of employment. From this perspective it is not surprising that those countries with dual apprenticeship training systems, which help to coordinate the supply and demand of young people with particular skills, experienced the lowest increases in youth unemployment following the crisis and are now being viewed by others as role models for reforming their VET systems (Heyes 2014) However, the Commission, in exhorting EU member countries to improve all forms of tertiary and vocational training, has arguably paid insufficient attention to the national contexts in which skills creation occurs and the potential tensions in attempting to increase the skills supply while simultaneously increasing labour market flexibility. Further research is required into the ways in which different types of education and training system and labour market regulation interact with and influence employer behaviour and the skill content and quality of jobs (in this vein see also Lloyd and Payne, 2016).

¹ The new recommendations are the latest in a series of attempts by the European institutions to encourage member states to ensure more effective school-to-work transitions. In 2005, the European Council agreed that every young unemployed person should be offered a 'new start' before reaching six months of being unemployed. In 2008, the Council cut the time period to four months in the case of school leavers.

² The CIPD study looks at growth by occupation over time and for the UK also uses the WERS surveys to examine whether job influence and discretion as a proxy for skills has changed by occupation over time.

³ The ONS study uses definitions of graduate and non-graduate jobs developed by Elias and Purcell (2013).

⁴ Table [lfsa_eggai], available at: <http://appsso.eurostat.ec.europa.eu/nui/show.do>

⁵ Table [lfsa_etgar], available at: <http://appsso.eurostat.ec.europa.eu/nui/show.do>

⁶ In some years for certain countries only two quarters were surveyed. However, for the purposes of this research we use the annual data provided by Eurostat which is aggregated from the quarterly surveys available.

⁷ The country level analysis does not include consideration of contract type and working time due to the level of complexity that this would create across 15 countries in attempting to establish similarities and trends.

⁸ Clearly the larger countries have more of an impact on changes in absolute numbers for a proportionally smaller change in employment compared to smaller countries.

⁹ The level of employment protections afforded temporary workers, and the gap between this and the protections afforded permanent workers, differs across European states and over time, see Heyes and Lewis (2015) for a discussion of trends in these protections. Such differences may affect worker perceptions of temporary work but is beyond the scope of this paper.

¹⁰ Highly educated young workers have seen different shifts in 'main status', 2002-6. There was an increase of 0.04m primarily in employment, 0.03m unemployed and 0.17m in education and training for the ten EU countries examined. Unlike with low and medium educated young workers this would indicate a greater increase in capacity for part-time work for this group.

¹¹ Part-time growth in 'clerks' offset approximately half of the full-time losses.

¹² In Germany the data recorded for 2007 was an implausible '0' for all three educational levels. Some of the growth in both countries may be explained by changes in the recording of information by category and by re-categorisation. More than half of the growth in health professionals in the UK is due to recording 'nursing and midwifery professionals' for which we do not have data in 2007. The rest of the UK growth and all of the German growth is in 'other health professionals' within which a number of occupations were re-categorised from associate professional in 2007 to professional in 2011, hence changing occupational group.

¹³ The number of legal professionals reduced from 10,000 to zero which seems implausible.

¹⁴ The job losses in Spain are less concentrated in sales work and more evenly spread across services.

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Appendix 1 – Labels and Descriptions of Variables used in the analysis of EU Labour Force Survey microdata

- Full-time/part-time working distinction (FTPT) for ‘employees’, indicated by Professional Status (STAPRO=3).
- Permanency of the job (TEMP), which includes Permanent and Temporary contracts for Employees, (STAPRO=3). We were able to deduce the number of self and family-employed workers within the ‘NA’ category of TEMP by crossing it with professional status (STAPRO), working time (FTPT) and labour status (ILOSTAT) variables. Within the ‘NA’ response for TEMP, only workers who report themselves as ‘Self-employed with/without employees’ (STAPRO=1,2) or ‘Family employed’ (STAPRO=4) also report themselves as full-time or part-time in the variable (FTPT). The remainder of NA responses to TEMP record ‘NA’ for FTPT and NA for STAPRO, which corresponds to ‘inactive’, ‘unemployed’ or ‘undertaking compulsory military service’ (ILOSTAT= 2,3,4).
- The highest level of education or training that the worker has completed (HATLEV1D) which maps to the more detailed International Standard Classification of Education (ISCED-97). There are three bands in HATLEV1D: lower secondary, including less than two years of upper secondary programmes that do not lead to tertiary education, upper secondary - including post-secondary non-tertiary programmes and tertiary education which includes theoretically oriented subject based degrees, degrees giving access to high skill occupations such as medicine or architecture, practical and occupation specific qualifications with a minimum of two years of full-time study or equivalent, and advanced research degrees.^{xv}
- Occupation, following the International Standard Classification of Occupations (ISCO-88) at one digit of aggregate coding (ISCO1D). This coding system was employed for the EU-LFS until 2010 when it was superseded by ISCO-08.^{xvi} At the one digit level of major groups, there was little change between ISCO-88 and ISCO-08 (see Appendix 2 for a correspondence table), the majority of the change was in the re-definition and creation of new occupations at lower levels of analysis. It is important to note that because this is survey data from surveys conducted by different national statistical offices that as we drill down the occupational detail there can be ‘0’ results in EU-LFS for certain detailed occupations in a particular country and year. We cannot know whether this is a legitimate result due to the time it takes to qualify for certain occupations ruling out young workers in a particular country, whether it is a consequence of a small sample size, or an anomaly in the way surveys were collected or coded in particular countries and years. Dealing with more aggregate groupings of occupations and countries mitigates these issues but does not eliminate them. At the one digit level, there are ten occupational groups (see appendix 2) which have been constructed drawing upon the concepts of ‘skill level and skill specialisation’ in both ISCO-88 and 08 (ILO 2012: 11).^{xvii} ISCO uses a four level categorisation of skill, which

maps to the six ISCED-97 levels of education necessary to perform the occupation, mentioned above. Eight of the ten one digit occupational groups have a one-to-one correspondence with a particular skill level and hence the *minimum* level of educational qualification to work in that occupation. As our analysis and the discussion in section 2 shows, the fact that an occupation requires a minimum level of educational qualification and skill does not preclude the possibility of workers who have achieved much higher levels performing those roles.

A small number of cases in each year, less than 1% of the total, had missing data for one or more of the variables being studied. These were excluded from the analysis.

Appendix 2 – ISCO-88 and 08 occupational major groups and corresponding skill levels

No.	ISCO-88 major group	ISCO-08 major groups	Skill level
1.	Legislators, Senior Officials and Managers	Managers	3,4
2.	Professionals	Professionals	4
3.	Technicians and Associate Professionals	Technicians and Associate Professionals	3
4.	Clerks	Clerical Support Workers	2
5.	Service workers and shop and market sales workers	Service and Sales Workers	2
6.	Skilled agricultural and fishery workers	Skilled agricultural, forestry and fishery workers	2
7.	Craft and related trades workers	Craft and related trades workers	2
8.	Plant and machine operators and assemblers	Plant and machine operators and assemblers	2
9.	Elementary Occupations	Elementary Occupations	1
0.	Armed Forces	Armed Forces occupations	1,2,4

For a fuller description of the types of work within each of these major groups, see ILO (2012) *International Standard Classification of Occupations ISCO-08 – Structure, Group definitions and correspondence tables*, Geneva, International Labour Office, available at <http://www.ilo.org/public/english/bureau/stat/isco/isco08/>

^{xv} A full explanation of the ISCED codes and the hierarchical progression through them is available at UNESCO (2006) *International Standard Classification of Education 1997 (ISCED -1997)re-edition*, available at <http://www.uis.unesco.org/Library/Documents/isced97-en.pdf>

^{xvi} See Eurostat (2015) *EU Labour Force Survey database User Guide*, Version November 2015, p.62, available at <http://ec.europa.eu/eurostat/documents/1978984/6037342/EULFS-Database-UserGuide.pdf>

^{xvii} Although greater emphasis has been given to the nature of the work performed rather than the formal education or training requirements in the definition of the skill level of an occupation in ISCO-08 than in ISCO-88. See ILO (2012) *International Standard Classification of Occupations ISCO-08 – Structure, Group definitions and correspondence tables*, Geneva, International Labour Office, available at <http://www.ilo.org/public/english/bureau/stat/isco/isco08/>

